

CLAIM OR CLAIMS

I claim:

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1. A method for precipitating unprecipitated nucleic acid from an aqueous solution, the method comprising the step of:

adding to the solution a polymeric carrier molecule coupled to an indicator molecule,

wherein the solution comprises an amount of a salt and an amount of an alcohol sufficient to cause the nucleic acid to precipitate from the solution.

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2. A method as claimed in Claim 1 further comprising the step of covalently coupling the carrier molecule to the indicator molecule.

3. A method as claimed in Claim 1 further comprising the step of covalently coupling the carrier molecule to the indicator molecule by reductively substituting the indicator molecule at a pair of vicinal hydroxides on the carrier molecule.

4. A method as claimed in Claim 1 comprising the step of adding to the solution a polysaccharide coupled to the indicator molecule.

5. A method as claimed in Claim 1 comprising the step of adding to the solution a glycogen coupled to the indicator molecule.

6. A method as claimed in Claim 1 comprising the step of adding to the solution Type III glycogen coupled to the indicator molecule.

7. A method as claimed in Claim 1 comprising the step of adding to the solution a polymeric carrier molecule coupled to an indicator molecule selected from a group consisting of a dye and a fluorophore.

8. A method as claimed in Claim 1 comprising the step of adding to the solution the polymeric carrier molecule coupled to an indicator molecule that comprises a primary amine group.

5 9. A method as claimed in Claim 1 comprising the step of adding to the solution the polymeric carrier molecule coupled to an indicator molecule selected from a group consisting of 5-(aminoacetamido)fluorescein (fluoresceinyl glycine amide), 4'-((aminoacetamido)methyl)fluorescein, 5-aminoeosin, N-(2-aminoethyl)-4-amino-3,6-disulfo-1,8-naphthalimide dipotassium salt, 5-((2-aminoethyl)amino)naphthalene-1-sulfonic acid sodium salt, 5-((2-aminoethyl)thioureidyl)fluorescein, 4'-(aminomethyl)fluorescein hydrochloride, 5-(aminomethyl)fluorescein hydrochloride, 7-amino-4-methylcoumarin, 1-aminomethylpyrene hydrochloride, 8-aminonaphthalene-1,3,6-trisulfonic acid disodium salt (ANTS), 5-(and-6)-((N-(5-aminopentyl)amino)carbonyl)-tetramethylrhodamine (tetramethylrhodamine cadaverine), 5-((5-aminopentyl)thioureidyl)eosin hydrochloride (eosin cadaverine), 5-((5-aminopentyl)thioureidyl)fluorescein (fluorescein cadaverine), 6-aminoquinoline, 5-(((2-(carbohydrazino)methyl)-thio)acetyl)amino)fluorescein, Cascade Blue cadaverine trisodium salt, Cascade Blue ethylenediamine trisodium salt, Cascade Blue hydrazide tripotassium salt, and Cascade Blue hydrazide trisodium salt.

25 10. A method as claimed in Claim 1 comprising the step of adding to the solution the polymeric carrier molecule coupled to 5-(and-6)-((N-(5-aminopentyl)amino)carbonyl)-tetramethylrhodamine (tetramethylrhodamine cadaverine).

30 11. A method as claimed in Claim 1 comprising the step of adding to the solution the polymeric carrier molecule coupled to a pH-responsive indicator molecule.

12. A method as claimed in Claim 11 comprising the step of adding to the solution the polymeric carrier molecule coupled to a pH-responsive indicator molecule selected from a group consisting of parosoiniline, New Fuchsin, and a succinimidyl ester.

13. A composition comprising:

a carrier molecule capable of co-precipitating from an aqueous solution with a nucleic acid molecule, the aqueous solution comprising an amount of a salt and an amount of an alcohol sufficient to cause the nucleic acid to precipitate from the solution; and

~~an indicator molecule coupled to the carrier molecule.~~

14. A composition as claimed in Claim 13 wherein the carrier molecule is a polysaccharide.

15. A composition as claimed in Claim 13 wherein the carrier molecule is a glycogen.

16. A composition as claimed in Claim 13 wherein the carrier molecule is Type III glycogen.

17. A composition as claimed in Claim 13 wherein the indicator molecule is selected from a group consisting of a dye and a fluorophore.

18. A composition as claimed in Claim 17 wherein the indicator molecule comprises a primary amine group.

19. A composition as claimed in Claim 13 wherein the indicator molecule is selected from a group consisting of 5-(aminoacetamido)fluorescein (fluoresceinyl glycine amide), 4'-((aminoacetamido)methyl)fluorescein, 5-aminoeosin, N-(2-aminoethyl)-4-amino-3,6-disulfo-1,8-naphthalimide dipotassium salt, 5-((2-aminoethyl)amino)naphthalene-1-sulfonic acid sodium salt, 5-((2-aminoethyl)thioureidyl)fluorescein, 4'-(aminomethyl)fluorescein hydrochloride, 5-(aminomethyl)fluorescein hydrochloride, 7-amino-4-methylcoumarin, 1-aminomethylpyrene hydrochloride, 8-aminonaphthalene-1,3,6-trisulfonic acid disodium salt (ANTS), 5-(and-6)-((N-(5-aminopentyl)amino)carbonyl)-tetramethylrhodamine (tetramethylrhodamine cadaverine), 5-((5-aminopentyl)thioureidyl)eosin hydrochloride (eosin cadaverine), 5-((5-aminopentyl)thioureidyl)fluorescein (fluorescein cadaverine), 6-aminoquinoline, 5-(((2-(carbohydrazino)methyl)-thio)acetyl)amino)fluorescein, Cascade Blue cadaverine trisodium salt, Cascade Blue ethylenediamine trisodium salt, Cascade Blue hydrazide tripotassium salt, and Cascade Blue hydrazide trisodium salt.

20. A composition as claimed in Claim 13 wherein the indicator molecule is 5-(and-6)-((N-(5-aminopentyl)amino)carbonyl)-tetramethylrhodamine (tetramethylrhodamine cadaverine).

21. A composition as claimed in Claim 13 wherein the indicator molecule is 5-(and-6)-((N-(5-aminopentyl)amino)carbonyl)-tetramethylrhodamine (tetramethylrhodamine cadaverine) and the carrier molecule is Type III glycogen.

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~~22. A composition as claimed in Claim 13 wherein the polymeric carrier molecule is coupled to a pH-responsive indicator molecule.~~

23. A composition as claimed in Claim 22 wherein the polymeric carrier molecule is coupled to a pH-responsive indicator molecule selected from a group consisting of parosuaniline, New Fuchsin, and a succinimidyl ester.

5            24. A composition as claimed in Claim 13 further comprising a nucleic acid molecule, the nucleic acid molecule and the carrier molecule being provided in an aqueous environment.